



A.H.M.'s

ANJUMAN ARTS, SCIENCE AND COMMERCE COLLEGE, BHATKAL**(AFFILIATED TO THE KARNATAKA UNIVERSITY, DHARWAD)****Accredited "B" Grade by NAAC**

1.3.1. List of cross cutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability integrated into the Curriculum

S. No.	Program	Course	Semester	Paper title & Chapters	Crosscutting Issues	Page No.
1	B.A.	Political Science	I	DSC 1: Basic Concept in Political Science Chapter 8: Equality meanings and Kinds	Human Values	1
2	B.A.	Political Science	I	Political Theory Paper II Unit 2: Liberalism Unit 3: Communitarianism and Multiculturalism Unit 4: Proponents of Secularism	Human Values	3
3	B.A.	Political Science	I	OEC 1: Human Rights Unit 1: Introduction of Human rights Unit 2: Human Rights and fundamental rights	Human Values	5
4	B.A.	Kannada	I (NEP)	AECC: Shalmala (ಶಾಲ್ಮಲಾ) 1- Unit 2: Prakruti (ಪ್ರಕೃತಿ) Unit 3: Balya (ಬಾಲ್ಯ)	Human Values & Environment and Sustainability	7
5	B.A.	Kannada	II (NEP)	AECC: Shalmala (ಶಾಲ್ಮಲಾ) 2- Unit 3: Priti (ಪ್ರೀತಿ)	Human Values	8
6	B.A.	Kannada	III (NEP)	AECC: Shalmala (ಶಾಲ್ಮಲಾ) 3- Unit 1: Rastriyate (ರಾಷ್ಟ್ರೀಯತೆ) Unit 2: Krushi (ಕೃಷಿ)	Human Values & Environment and Sustainability	9
7	B.A.	Kannada	IV (NEP)	AECC: Shalmala (ಶಾಲ್ಮಲಾ) 4- Unit 1: Kayaka (ಕಾಯಕ) Unit 2: Badatana (ಬಡತನ)	Human Values	11
8	B.Sc.	Kannada	II (NEP)	AECC: Varada (ವರದಾ) 2- Unit 1: Jeevana Kale (ಜೀವನ ಕಲೆ)	Human Values & Environment and	12



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				Unit 2: Kanasu (ಕನಸು) Unit 3: Male (ಮಳೆ)	Sustainability	
9	B.Sc.	Kannada	III (NEP)	AECC: Varada (ವರದಾ) 3- Unit 1: Manaviyate (ಮಾನವೀಯತೆ) Unit 3: Vichar Kranti (ವಿಚಾರ ಕ್ರಾಂತಿ)	Human Values	13
10	B.Sc.	Kannada	IV (NEP)	AECC: Varada (ವರದಾ) 4- Unit 1: Damanita Loka (ಧಮನಿತ ಲೋಕ) Unit 2: Sahishnute (ಸಹಿಷ್ಣುತೆ) Unit 3: Shree samanyana Baduku (ಶ್ರೀ ಸಾಮಾನ್ಯನ ಬದುಕು)	Human Values	15
11	B.Com	Kannada	III (NEP)	AECC: ಮಲಪ್ರಭಾ 3- Unit 3: Linga Samanate (ಲಿಂಗ ಸಮಾನತೆ)	Gender	16
12	B.Com	Kannada	IV (NEP)	AECC: ಮಲಪ್ರಭಾ 4- Unit 1: Kadal (ಕಡಲು) Unit 2: Sahabalve (ಸಹಬಾಳ್ವೆ) Unit 3: Savu (ಸಾವು)	Environment and Sustainability & Human Values	17
13	B.A./ B.Sc./ B.com	Environmental Studies	II (NEP)	AECC: Environmental Studies Chapter 1: Introduction to environmental studies Chapter 2: Ecosystem Chapter 3: Natural Resources Chapter 4: Biodiversity and conservation Chapter 5: Environmental pollution Chapter 6: Environmental policies and practices Chapter 7: Human communities and	Environment and Sustainability	18



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				the environment		
14	B.Sc.	Botany	IV (NEP)	DSCC: Ecology and Conservation Biology Chapter 3: Phytogeography & environmental issues Chapter 4: Biodiversity and its Conservation	Environment and Sustainability	20
15	B.Sc.	Physics	I (NEP)	OEC-I: Energy Sources Unit 1: Introduction to energy sources Unit 2: Solar Energy and its application Unit 3: Wind energy harvesting and Ocean energy and energy from Biomass	Environment and Sustainability	23
16	B.Sc.	Physics	II (NEP)	OEC-II: Climate Science Unit 1: Atmosphere Unit 2: Climate Science Unit 3: Global Climate change	Environment and Sustainability	24
17	B.Sc.	Chemistry	II (NEP)	DSCC-3: Chemistry Theory III Unit 4: Analytical Chemistry- Water Analysis, Water treatment technology	Environment and Sustainability	25
18	B.Sc.	Chemistry	V (NEP)	DSC-11: Chemistry Theory XI Unit 4: Environmental Chemistry	Environment and Sustainability	28
19	B.Sc.	Chemistry	VI (NEP)	DSC-13: Chemistry Theory 13 Unit 4: Green Chemistry	Environment and Sustainability	31

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BHATKAL-581 320

B.A. Semester – I

Subject: **POLITICAL SCIENCE**
Discipline Specific Course (DSC)

The course POLITICAL SCIENCE in I semester has two papers (Paper I & II) for 06 credits: Each paper has 03 credits. Both the papers are compulsory. Details of the courses are as under.

Course No.-1 (Paper No. I)

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-01	DSCC	Theory	03	03	42 hrs	2hrs	40	60	100

Course No.1 (Paper-I): Title of the Course (Paper-I) : **BASIC CONCEPTS IN POLITICAL SCIENCE**

Course Outcome (CO):

After completion of course (No.1), students will be able to:

CO 1 : Understand Political Science, theoretically and will gain knowledge to explain and analyze politics at large.

CO 2: Understand the the dynamics of politics.

CO 3: Understand to inculcate the democratic spirit.

Syllabus- Course 1: Title- BASIC CONCEPTS IN POLITICAL SCIENCE	Total Hrs: 42
Unit-I	14 hrs
Chapter -1 Meaning of Politics, Nature, Scope and Importance of Political Science, Approaches to the study of Political Science, Emergence of the idea of Political Domain	
Chapter- 2 Meaning, Definitions and Elements of State, Difference between State and Government, State and Society, State and Association, Theories of State- Idealist Theory, Liberal, Neo-Liberal Theory, Marxist and Gandhian Theory of State.	
Chapter-3 Civil Society- Meaning and Importance.	
Unit-II	14 hrs
Chapter-4 Emergence, Meaning and Characteristics of Sovereignty and Law	
Chapter-5 Kinds of Sovereignty: Austin's Concept of Sovereignty and Pluralistic Critique.	

Chapter-6 Theories of Sovereignty -Monistic, Pluralistic, Historical, Philosophical, Pluralism Theory, Challenges to the State Sovereignty in the age of Globalization.	
Unit-III	14 hrs
Chapter-7 Liberty: Meaning and Kinds; Positive and Negative Chapter-8 Equality: Meaning and Kinds (Social, Economic and Political) Chapter-9 Power and Justice: Meaning and kinds, Political Obligation: Nature and Theories.	

Books Recommended.

1. Political Theory: Ideas & Concepts, S. Ramswamy, Delhi, Macmillan, 2002.
2. Modern Political Theory, S. P. Verma, New Delhi, Vikas, 1983.
3. Principles of Modern, Political Science, JC Johri, Sterling Publishers Pvt. Ltd. 1995.
4. Principles of Political Science, AC Kapur, New Delhi, Sultan Chand and Sons, 2004.
5. Principles of Political Science, N.N Agarwal, Vidya Bhushan, Vishnoo Bhawan, R. Chand & Co, New Delhi, 1998.
6. Political Science Theory, S.C Pant, Prakashan Kendra, Lucknow, 1998.
7. Political Science Theory, S. N Dubey, Lakshmi Narain Agarwal, Agra, 2002.
8. Principle of Modern Political Science, J C Johari, Sterling Publications, New York, 2009.
9. Principles of Political Science, Anup Chand Kapur, S Chand & Co Ltd, 2010.

B.A. Semester – I

Subject: **POLITICAL SCIENCE**
Discipline Specific Course (DSC)

Course No.-2 (Paper No. II)

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-02	DSCC	Theory	03	03	42 hrs	2hrs	40	60	100

Course No.2 (Paper-II): Title of the Course (Paper-II) : POLITICAL THEORY

Course Outcome (CO):

After completion of course (No.2), students will be able to:

CO 1: Understand the nature and relevance of Political Theory.

CO 2: Understand the different concepts like Liberty, Equality, Justice and Rights.

CO 3 : Reflect upon some of the important debates in Political Theory.

Syllabus- Course 2: Title- POLITICAL THEORY		Total Hrs: 42
Unit-I		14 hrs
Chapter-1 Meaning, Nature and Importance of Theory and Political Theory, Traditional Approaches to Political Theory- Normative, Historical, Philosophical, Institutional Chapter-2 Modern Approaches- Behavioral, Post-Behavioral, David Easton's Political System and Marxian Approach. Chapter-3 Relevance of Political Theory, Decline and Resurgence of Political Theory		
Unit-II		14 hrs
Chapter-4 Liberalism: J.S Mill Chapter-5 Neo- Liberalism: Rawls Chapter-6 Libertarianism: Nozick		

Unit-III	14 hrs
Chapter-7 Communitarianism and Multiculturalism: Indian perspective, Colonial Discourse and Post Colonialism, Post Colonial Response and its Limitations Chapter-8 Proponents of Secularism – Nehru, Gandhi, Rajiv Bhargav. Chapter-9 Critics of Secularism: Ashish Nandy, T.N. Madan, S.N. Balagangadhara	

Books recommended.

1. Ahmed. V, Theory: Classes, Nations Literatures.: Verso, London, 1992.
2. Arendt. H., On Revolution, Viking, New York, 1963
3. Ashcroft. B, The Post-Colonial Studies Reader, Rout ledge London, 1995
4. Bryson. V, Feminist political Theory, Macmillan, London, 1992.
5. Christopher Butler. Postmodernism: A very Short Introduction, OUP Oxford, 2002.
6. Christopher Norris, The Truth about Postmodernism.: Wiley- Blackwell, New Jersey, 1993.
7. Connolly. W, Identity/Difference: Democratic Negotiations, Cornell University Press, NY, 1991.
8. Edward Said, Orientalism, Pantheon Books, New York, 1978.
9. Elstain. J. B, Public Man, Private Man: women in Social and Political Thought, Princeton University Press, Princeton NJ, 1981.
10. Fanon. F. Black skin, white Masks, translated by C. L. Markham, Grove Press, New York, 1967.
11. Jean Francis Lyotard. The Postmodern Condition- A report on Knowledge. Parris. Minuit, 1979.
12. Balagangadhara, S.N., and Jakob De Roover, "The Secular State and "Religious Conflict: Liberal neutrality and the Indian Case of Pluralism". The Journal of Political Philosophy 15, no. 1: 67-92, 2007.
13. Bhargava, Rajeev. ed. Secularism and Its Critics, Oxford University Press, New Delhi, 1998.
14. Veena Das, Dipankar Gupta and Patricia. eds.. Tradition, Pluralism and Identity, Uberoi New Delhi, 1999.
15. Nehru, Jawaharlal. 1946. The Discovery of India. Jawaharlal Nehru Memorial Fund, Oxford University Press, New Delhi, 1988.
16. Rochana Bajpai, The conceptual vocabularies of secularism and minority rights in India, Journal of Political Ideologies, 2002.

B.A. Semester – I

Subject: **HUMAN RIGHTS**
Open Elective Course (OEC-1)
(OEC for other students)

Course No.	Type of Course	Theory/ Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
OEC-1	OEC	Theory	03	03	42 hrs	2hrs	40	60	100

OEC-1: Title of the Course : **HUMAN RIGHTS**

Course Outcome (CO):

After completion of course, students will be able to:

CO 1. Explain the basic concept of Human Rights and its various formulations.

CO 2. Have necessary knowledge and skills for analyzing, interpreting, and applying the Human Rights standards and sensitize them to the issues.

CO 3. Develop ability to critically analyse Human Rights situations around them.

Syllabus- OEC: Title- HUMAN RIGHTS		Total Hrs:
		42
Unit-I		14 hrs
Chapter-1 Meaning, nature, scope and Classification of Human Rights		
Chapter-2 The Human Rights of First generation (Civil and Political Rights), Second generation (Economic, Social and Cultural Rights), Third generation (Collective Rights) and Fourth generation (Subjective Rights)		
Chapter-3 Universal Declaration of Human Rights		
Unit-II		14 hrs
Chapter-4. Human Rights and Fundamental Rights, Fundamental Rights and Fundamental Duties in India		
Chapter- 5. National Human Rights Commission (NHRC) - Composition and its function.		
Chapter-6. Karnataka State Human Rights Commissions (KSHRCs) – Composition and its functions.		

Unit-III	14 hrs
Chapter -7 National Commission and Committees for SCs/STs, Minorities' Commission, Women' Commission Chapter-8 Major issues and concerns of Human Rights- Discrimination and violence against women, children, Dalits and Minorities, Trafficking, Child Labour and Bonded Labour Chapter-9 Challenges to Human Rights	

Books recommended.

1. Baxi Upendra (ed.), The Right to be Human, Lancer International, Crawford, New Delhi, 1987.
2. James(ed.), The Rights of People, Oxford, New York, 1988.
3. Craston, M. What are Human Rights, Bodely Head, London, 1973
4. Rhonda L.Callaway& Julie Harrelson- Stephens,"International Human Rights", Published by viva books private limited, New Delhi, 2010.
5. Janusz Symonides,"Human Rights Concept and Standards", Rawat Publications, New Delhi, 2019.
6. Sunil Deshta and KiranDeshta,"Fundamental Human Rights", Deep and Deep Publications, New Delhi, 2011.
7. qAPP1-AD2 .vblz1 "oIAEP1 oPNUM ZAJ wRkADEI oAUE
1'ZAAVUKA", Yk AgAAU PEAD1 Pl e+ZAPAIk zAgP Agl2015.
8. Donnelly, Jack and Rhoda Howard (ed.), International Handbook of Human Rights, Westport, Connecticut: Greenwood Press,1987.
9. Donnelly, Jack, Universal Human Rights in Theory and Practice, New Delhi, Manas, 2005.
10. Dr.Tapan Biswal, "Human Rights Gender and Environment", Viva Books Private Limited Publishers, New Delhi 2006
11. Satya.P. Kanan, "Human Rights Evolution and Development", Wisdom Press, New Delhi 2012.
12. Gerwith, Human Rights: Essays on Justification and Application, University of Chicago Press, Chicago,1982.
13. Khan, Mumtaz Ali, Human Rights and the Dalits, Uppal Publishing House, New Delhi, 1995.
14. V.T.Patil,"Human Rights Developments in South Asia", Authors Press Publishers, Delhi 2003.
15. Dr.S.K. Gupta, "Statewise Comprehensive Information on Human Right Violation", Published by ALP Books, Delhi. 2009
16. Acharya, B.C. A Handbook of Wome;s Human Rights, Wisdom Press, New Delhi, 2011.
17. South Asia Human Rights Documentation Centre, Introducing Human Rights, Oxford, New Delhi, 2006.
18. Lillich, R. International Human Rights: Law Policy and Practice, Boston: Little Brown and Co., 1991 2ndEdn.
19. CdAOEIZB°1. EACgACdAOEIZB°1. ,AYABE1 AYAZPBJA CEAPAZPBJA H JZI.
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Name of Course (Subject) : Kannada

B.A./B.Music/B.VA / B.Sc. Hotel Management/ BTM/ BSW

Semester – I

Subject: **Kannada**

Ability Enhancement Compulsory Course (AECC)

AECC-I

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-01	AECC	Theory	03	03	42 hrs	2hrs	40	60	100

Title of the AECC: ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ- ಶಾಲ್ಕಲಾ-೧

Course Outcome (CO):

After completion of course -1, students will be able to:

- CO 1 :** ಕನ್ನಡ ಭಾಷೆಯ ಬೆಳವಣಿಗೆಯ ಹಂತಗಳ ಪರಿಚಯ ಹಾಗೂ ಸಾಂಸ್ಕೃತಿಕ ವೈವಿಧ್ಯತೆಗಳ ಪರಿಚ್ಛಾಸ ವೃದ್ಧಿಸುತ್ತದೆ.\
- CO 2 :** ಕನ್ನಡ ಭಾಷೆಯ ಪ್ರಾಚೀನ ಕಾವ್ಯಗಳ ಸ್ಥೂಲ ಪರಿಚಯದೊಂದಿಗೆ ವಿವಿಧ ರೂಪಗಳ ಬೆಳವಣಿಗೆಯ ಹಂತಗಳು ಗೊತ್ತಾಗುತ್ತವೆ.
- CO 3 :** ಭಾಷಾ ಚರಿತ್ರೆಯೊಂದರ, ಅದರಲ್ಲಿಯೂ ಕನ್ನಡ ಭಾಷೆಯ ಚರಿತ್ರೆ ಅಧ್ಯಯನದ ಶಿಸ್ತು ಪ್ರಾಪ್ತಿಸುತ್ತದೆ.
- CO 4 :** ಶಾಸನಗಳ ಪರಿಚಯ ಹಾಗೂ ಅವುಗಳ ವೈವಿಧ್ಯತೆಯ ಅರಿವು ಉಂಟಾಗುತ್ತದೆ.\
- CO 5 :** ಪ್ರಾಚೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯ ರೂಪಗಳ ಸ್ಥೂಲ ಪರಿಚಯವಾಗುತ್ತದೆ.

Syllabus- AECC 1: Title- ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ-ಶಾಲ್ಕಲಾ-೧	Total Hrs: 42
Unit-I ಕನ್ನಡ ನಾಡು-ನಡಿ-ಚಿಂತನೆ	14 hrs
1. ಕವಿರಾಜಮಾರ್ಗ (ಆಯ್ದ ಭಾಗಗಳು) : ಶ್ರೀವಿಜಯ 2. ಪಂಪಭಾರತದ (ಆಯ್ದ ಭಾಗಗಳು) : ಪಂಪ 3. ನನ್ನ ಕನ್ನಡ ಜಗತ್ತು : ಕೆ.ವಿ. ಸುಬ್ಬಣ್ಣ (ಲೇಖನ) 4. ಸಾಯುತಿದೆ ನಿಮ್ಮ ನುಡಿ ... : ಕುವೆಂಪು (ಕವಿತೆ)	
Unit-II ಪ್ರಕೃತಿ	14 hrs
1. ಮಲೆ ದೇಗುಲ : ಪು.ತಿ.ನ. (ಕವನ) 2. ಬೆಳಗು : ಬೇಂದ್ರೆ (ಕವನ) 3. ಬೀಜ ಮತ್ತು ಭೂಮಿ : ವಂದನಾ ಶಿವ (ಲೇಖನ) 4. ಇರುವುದೊಂದೇ ಭೂಮಿ : ನಾಗೇಶ ಹೆಗಡೆ (ಲೇಖನ)	
Unit-III ಬಾಲ್ಯ	14 hrs
1. ರಂಜನಾ ಕವಿತೆ : ಚೆನ್ನವೀರ ಕಣವಿ (ಕವಿತೆ) 2. ಬೆಂಕಿ ಬೆಡಗು (ಆತ್ಮಕಥನದ ಆಯ್ದ ಭಾಗ) : ಉಮಾಶ್ರೀ 3. ಗಾಂಧೀ : ಬೆಸಗರಹಳ್ಳಿ ರಾಮಣ್ಣ (ಕಥೆ)	

Books recommended.

1. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ : ರಂ.ಶ್ರೀ. ಮುಗಳಿ
2. ಹೊಸಗನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ : ಎಲ್.ಎಸ್.ಶೇಷಗಿರಿರಾವ್
3. ಗಂಗೋತ್ರಿ : ಕುವೆಂಪು ಅಭಿನಂದನ ಗ್ರಂಥ
4. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ : ತ.ಸು. ಶಾಮರಾಯ

5. ಕನ್ನಡದಲ್ಲಿ ಅತ್ಯುತ್ಕೃಷ್ಟತೆಗಳು : ಶರಣಮ್ಮ ಗೊರೆಬಾಳ

B.A./B.Music/B.VA / B.Sc. Hotel Management/ BTM/ BSW

Semester – II

Subject: **KANNADA**

Ability Enhancement Compulsory Course (AECC)
AECC-2

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-02	AECC	Theory	03	03	42 hrs	2hrs	40	60	100

Title of the Course : ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ- ಶಾಲಾ-೨

Course Outcome (CO):

After completion of course, students will be able to:

- CO 1 :** ಸಾಹಿತ್ಯದ ಓದು, ತಿಳುವಳಿಕೆ ಹಾಗೂ ಬರವಣಿಗೆಯನ್ನು ರೂಢಿಸಿಕೊಳ್ಳುವುದು.
- CO 2 :** ನಾಡು-ನುಡಿಯನ್ನು ಕುರಿತು ಅರಿವನ್ನು ಹೆಚ್ಚಿಸಿಕೊಳ್ಳುವುದು.
- CO 3 :** ಸಮಕಾಲೀನ ವಿದ್ಯಮಾನಗಳ ಅರಿವು. ಸಾಮಾಜಿಕ ಹೊಣೆಗಾರಿಕೆಯ ಅರಿವು.
- CO 4 :** ಸದೃಶ ಬೌದ್ಧಿಕ ವ್ಯಕ್ತಿತ್ವ ನಿರ್ಮಾಣ ಹೊಂದುವುದು.
- CO 5 :** ಭಾಷಾ ಕೌಶಲ್ಯವನ್ನು ಬೆಳೆಸಿಕೊಳ್ಳುವುದು

Syllabus- AECC- 2: Title- ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ-ಶಾಲಾ-೨		Total Hrs: 42
Unit-I ಜಾಗತೀಕರಣ		14 hrs
1. ಗಿರಣಿ ವಿಸ್ತಾರ ನೋಡಮ್ಮ	: ಶಿಶುನಾಳ ಪರೀಕ್ಷ (ತತ್ತ್ವಪದ)	
2. ಇಗೋ ಬಂದೆ	: ಎಚ್.ಎಸ್. ಶಿವಪ್ರಕಾಶ (ಕವಿತೆ)	
3. ಜಾಗತೀಕರಣ ಮತ್ತು ಸಂಸ್ಕೃತಿ	: ರಾಜೇಂದ್ರ ಚೆನ್ನಿ (ಲೇಖನ)	
4. ಎ ದಿಲ್ ಮಾಂಗೇ ಮೋರ್	: ಅಮರೇಶ ನುಗಡೋಣಿ (ಕಥೆ)	
Unit-II ಸಮಾಜ		14 hrs
1. ಹಳ್ಳಿಯ ಚಿತ್ರಗಳು	: ಗೊರೂರು ರಾಮಸ್ವಾಮಿ ಅಯ್ಯಂಗಾರ (ಪ್ರಬಂಧ)	
2. ಭಾರತದ ಸಮಾಜ/ ಜಾತಿ ವ್ಯವಸ್ಥೆ	: ಅಂಬೇಡ್ಕರ್ (ಸ್ವದೇಶಕ್ಕೆ ಸ್ವಾಗತ)	
3. ಗಜಲ್	: ಜಂಬಣ್ಣ ಅಮರಚಿಂತ್	
4. ಮೀಯೋ ಆಟ	: ಎಚ್. ನಾಗವೇಣಿ (ಕಥೆ)	
Unit-III ಪ್ರೀತಿ		14 hrs
1. ಒಂದಿರುಳು ಕನಸಿನಲಿ	: ಕೆ.ಎಸ್. ನರಸಿಂಹಸ್ವಾಮಿ	
2. ಮೋಕ್ಷವನ್ನು ಹುಡುಕುತ್ತ ಪ್ರೀತಿಯ ಬಂಧನದಲ್ಲಿ	: ಪಿ. ಲಂಕೇಶ	
3. ಪ್ರೀತಿ ಒಂದು ಕಲೆಯೇ?	: ಎರಿಕ್ ಫ್ರಾಮ್ (ಅನು. ಕೆ.ವಿ.ಎನ್.)	
4. ಸ್ಮಶಾನ ಚೆಲುವೆ	: ಸಿದ್ದಲಿಂಗಯ್ಯ (ಕವಿತೆ)	

Books recommended.

೧. ಜಾಗತೀಕರಣ ಒಂದು ಸಮಗ್ರ ಮಂಥನ : ಕನ್ನಡ ಸಾಹಿತ್ಯ ಅಕಾಡೆಮಿ
೨. ದೇಶೀವಾದ : ರಾಜೇಂದ್ರ ಚೆನ್ನಿ
೩. ಜಾಗತೀಕರಣ ಮತ್ತು ಜಾನಪದ : ಗವೀಶ ಹಿರೇಮಠ
೪. ಮೈಸೂರು ಮಲ್ಲಿಗೆ : ಕೆ.ಎಸ್. ನರಸಿಂಹಸ್ವಾಮಿ
೫. ಚೈತ್ರ : ಜಿ.ಎಸ್. ಶಿವರುದ್ರಪ್ಪ
೬. ಶಿಶುನಾಳ ಶರೀಫರ ನೂರಾರು ತತ್ತ್ವಪದಗಳು : ಅ.ರಾ.ಸೇ. ಕಾಮಧೇನು ಪುಸ್ತಕ ಭವನ, ಬೆಂಗಳೂರು

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AECC									
Sem	Type of Course	Theory/ Practical	Instruction hour per week	Total hours of Syllabus / Sem	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks	Credits
III	AECC	Theory	04 hrs	42	02 hrs	40	60	100	03
	DSC	Theory	04 hrs	42	02 hrs	40	60	100	03
	DSC	Theory	04 hrs	42	02 hrs	40	60	100	03
	OEC	Theory	04 hrs	42	02 hrs	40	60	100	03
IV	AECC	Theory	04 hrs	42	02 hrs	40	60	100	03
	DSC	Theory	04 hrs	42	02 hrs	40	60	100	03
	DSC	Theory	04 hrs	42	02 hrs	40	60	100	03
	OEC	Theory	04 hrs	42	02 hrs	40	60	100	03
Details of the other Semesters will be given later									

Student shall choose two AECC, out of which Kannada as AECC is mandatory.

Name of Course (Subject) : Kannada

B.A. Semester – III

Subject: Kannada

Ability Enhancement Compulsory Course (AECC)

AECC-III

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-03	AECC	Theory	03	03	42 hrs	2hrs	40	60	100

Title of the AECC: ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ- ಕಾಲ್ಪಲಾ-೩

Course Outcome (CO):

After completion of course -1, students will be able to:

CO 1 : ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ರಾಷ್ಟ್ರಪ್ರೇಮ ಗಟ್ಟಿಗೊಳ್ಳುತ್ತದೆ.

CO 2 : ಧರ್ಮ, ಜಾತಿ-ಮತ, ಪಂಥ-ಪಂಗಡಗಳನ್ನು ಮೀರಿ ಮಾನವೀಯತೆಗಾಗಿ ಮಿಡಿಯುವ, ರಾಷ್ಟ್ರಕ್ಕಾಗಿ ದುಡಿಯುವ ಅಭಿಪ್ರೇ ಸದೃಢಗೊಳ್ಳುತ್ತದೆ.

CO 3 : ಪ್ರಾದೇಶಿಕ ಪ್ರೀತಿಯೊಂದಿಗೆ ರಾಷ್ಟ್ರಾಭಿಮಾನದ ಮನೋಭಾವ ಮೂಡುತ್ತದೆ.

CO 4 : ಸ್ವತಂತ್ರ-ಸ್ವಾಭಿಮಾನ-ಸದೃಢ ಭಾರತದ ಕನಸು ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಮೂಡುತ್ತದೆ.

CO 5 : ಕೃಷಿ-ಕೀಡೆ ಪೊದಲಾದ ಜ್ಞಾನರಾಶಿಗಳಿಂದಾಗಿ ವಿದ್ಯಾರ್ಥಿಗಳ ಸರ್ವಾಂಗೀಣ ಅಭಿವೃದ್ಧಿ ಸಾಧ್ಯವಾಗುತ್ತದೆ.

Syllabus- AECC III : Title- ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ-ಶಾಲ್ಕಲಾ-೨	Total Hrs: 42
ಘಟಕ-I ರಾಷ್ಟ್ರೀಯತೆ	12 hrs
1. ಕನ್ನಡ ರಾಷ್ಟ್ರೀಯತೆಯ ಸ್ವರೂಪ : ಡಿ.ಆರ್. ನಾಗರಾಜ 2. ಹಲಗಲಿ ಬೇಡರು : ಲಾವಣಿ 3. ಅಜ್ಞಾತ ವಾಸಿ (ಕಥೆ) : ಬಸವರಾಜ ಕಟ್ಟಿಮನಿ	
ಘಟಕ-II ಕೃಷಿ	10 hrs
೧. ನೇಗಲಯೋಗಿ : ಕುವೆಂಪು ೨. ತೋಟದಿಂದ ತಟ್ಟಿಗೆ : ನಾಗೇಶ ಹೆಗಡೆ ೩. ಶ್ರೀಮತಿ ಶಾರದಾ ದಾಬಡೆ : ಒಂದು ಲೇಖನ	
ಘಟಕ-III ಕ್ರೀಡೆ	10 hrs
೧. ನೆತ್ತಮನಾಡಿ ಭಾನುಮತಿ ಸೋಲ್ಗೊಡೆ : ಪಂಪ ೨. ಕರ್ನಾಟಕ ಪ್ರಾದೇಶಿಕ ಜನಪದ ಕಲೆಗಳು (೮ ರಿಂದ ೧೦ ಪುಟಕ್ಕೆ ಮಿಕ್ಕದಂತೆ) ೩. ಮೊದಲ ದಲಿತ ಕ್ರಿಕೆಟರ್ ಕೆ. ಬಾಲು : ಗಿರೀಶ ನಡುವಿನಮನಿ	
ಘಟಕ-IV ಸಂಕೀರ್ಣ	10 hrs
೧. ನಾನೇಕೆ ಬರೆಯುತ್ತೇನೆ : ಜಿ.ಎಸ್. ಶಿವರುದ್ರಪ್ಪ ೨. ಭಾವಗೀತೆ : ದ.ರಾ. ಬೇಂದ್ರೆ ೩. ಹೊಸತಲೆಮಾರಿನ ತಲ್ಲಣಗಳು : ೧. ಎನ್.ಕೆ. ಹನುಮಂತಯ್ಯ ೨. ಕೆ. ಅಕ್ಷತಾ	

B.A. Semester - IV

Subject: KANNADA
Ability Enhancement Compulsory Course (AECC)

AECC-IV

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-04	AECC	Theory	03	03	42 hrs	2hrs	40	60	100

Title of the Course : ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ- ಶಾಲಾ-೪

Course Outcome (CO):

After completion of course, students will be able to:

- CO 1 :** ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಕಾಯಕದ ಮಹತ್ವ ಅರಿವಾಗಿ ದುಡಿದೇ ಉಣ್ಣುವ ಮನಸ್ಸುಂಟಾಗುತ್ತದೆ.
- CO 2 :** 'ಕಾಯಕವೇ ಕೈಲಾಸ'ವೆಂಬ ಅರಿವು ಮೂಡುತ್ತದೆ.
- CO 3 :** ಬಡತನ ಅಡೊಂದು ದಾರಿದ್ರ್ಯ ಅದು ಸ್ವಪ್ರಯತ್ನ ಮತ್ತು ಪ್ರಾಯೋಗಿಕತೆಯಿಂದ ತೊಲಗಬಲ್ಲದೆಂಬ ಅರಿವು ಮೂಡುತ್ತದೆ.
- CO 4 :** ಬಡತನ ಕುರಿತಾದ ಸಾಹಿತ್ಯವಲೋಕನದಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಅದನ್ನು ಮೆಟ್ಟಿ ಬದುಕುವ ಭಲ ಮೂಡುತ್ತದೆ.
- CO 5 :** ಮುಕ್ತಿಗಿಂತ ಹೊತ್ತು ಶ್ರೇಷ್ಠವೆಂಬ ಅರಿವು ಮೂಡುತ್ತದೆ.

Syllabus- AECC- 4: Title- ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ-ಶಾಲಾ-೪	Total Hrs: 42
ಘಟಕ-I ಕಾಯಕ	12 hrs
ಅ. ಕಾಯಕಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ವಚನಕಾರರ ಆಯ್ದ ವಚನಗಳು : 1) ಬಸವಣ್ಣ 2) ನುಲಿಯ ಚಂದಯ್ಯ 3) ಅಂಬಿಗರ ಚೌಡಯ್ಯ 4) ಸೂಳೆ ಸಂಕವೆ ಬ. ಮೋಚಿ (ಕಥೆ) - ಭಾರತೀಪ್ರಿಯ ಕ. ಹಸಿದ ಕೈಗಳಿಗೆ ಕಾಯಕದ ಕಾನೂನು-ಜಸ್ವಿನ್ ಹೆಚ್.ಎನ್. ನಾಗಮೋಹನದಾಸ	
ಘಟಕ-II ಬಡತನ	10 hrs
ಅ. ಬಡತನ - ಮಜೆದ್ ರೆಹಮಾನಿ ಮಾ ಅನುವಾದ : ಅಕ್ಷರ ಕೆ.ವಿ. ಬ. ಜನಪದ ತ್ರಿಪದಿಗಳು ಮತ್ತು ಹಾಡುಗಳು ಕ. ಜೀತ- ಬೆಸಗರಹಳ್ಳಿ ರಾಮಣ್ಣ	
ಘಟಕ-III ಕಾಲ	10 hrs
ಅ. ಕಾಲ ನಿಲ್ಲುವುದಿಲ್ಲ (ಕವಿತೆ) - ಚೆನ್ನವೀರ ಕಣವಿ ಬ. ಮುದ್ದಣನ ರಾಮಾಶ್ವಮೇಧ ಕೃತಿಯ ಮಳೆಗಾಲದ ವರ್ಣನೆ ಕ. ಅಕಾಲ- ಸಿದ್ಧಲಿಂಗ ಪಟ್ಟಣಶೆಟ್ಟಿ (ಕವಿತೆ)	
ಘಟಕ-IV ಸಂಕಿರಣ	10 hrs
ಅ. ಅಧೋಜಗತ್ತಿನ ಅಕಾಂಕ್ಷೆ - ಜಂಬಣ್ಣ ಅಮರಚಿಂತ ಕ. ಬರವಣಿಗೆಯ ಶಾಲೀಮು 1) ಬರಹದ ಸಿದ್ಧತೆಯ ಅರಿವು ಲೇಖಕರಲ್ಲಿ ಇರಲೇ ಬೇಕು - ಬಾಳಾಸಾಹೇಬ ಲೋಕಾಪುರ 2) ಬರಹವೆಂಬುದು ಕಟ್ಟಿಗೆ ಇದ್ದಿಲಾಗುವ ಬೆರಗು - ಟಿ.ಎಸ್. ಗೊರವರ 3) ಶಾಲೀಮೆಂಬುದು ಅಪ್ರಜ್ಞಾಪೂರ್ವಕವಾಗಿಯೇ ನಡೆಯುತ್ತದೆ - ಉಮಾರಾವ್ 4) ಬದುಕಿ ಬದುಕಿಸುವ ತಹತಹ - ಅಬ್ದಾಸ ಮೇಲಿನಮನಿ	

B.Sc. /BCA/ BASLP/ B.Sc.(Paper & Pulp) (Hons.)**Semester – II****Subject: KANNADA****Ability Enhancement Compulsory Course (AECC)****AECC-2**

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-02	AECC	Theory	03	03	42 hrs	2hrs	40	60	100

Title of the Course : ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ-ವರದಾ-೨**Course Outcome (CO):**

After completion of course, students will be able to:

- CO 1** : ಕನ್ನಡ ನಾಡು ನುಡಿ ಸಂಸ್ಕೃತಿ ಕುರಿತು ತಿಳುವಳಿಕೆಯನ್ನು ವಿಸ್ತರಿಸುವುದು.
- CO 2** ವೈಚಾರಿಕ ಸಂಶೋಧನಾತ್ಮಕ ವಿಮರ್ಶಾತ್ಮಕ ದೃಷ್ಟಿಕೋನವನ್ನು ಬೆಳೆಸುವುದು.
- CO 3** ಸೃಜನಶೀಲತೆ ಅಭಿವ್ಯಕ್ತಿ ಸಾಮರ್ಥ್ಯಗಳನ್ನು ಬೆಳೆಸುವುದು.
- CO 4** ಸದೃಢ ಬೌದ್ಧಿಕ ವ್ಯಕ್ತಿತ್ವ ನಿರ್ಮಾಣ ಹೊಂದುವುದು.
- CO 5** ಕನ್ನಡದಲ್ಲಿ ವೈಜ್ಞಾನಿಕ ಕೌಶಲ್ಯ, ಜೀವನ ಕೌಶಲ್ಯ ಹಾಗೂ ಉದ್ಯಮಶೀಲತೆ ಹೊಂದುವುದು.

Syllabus- AECC- 2: Title- ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ-ವರದಾ-೨		Total Hrs: 42
Unit-I ಜೀವನ ಕಲೆ		14 hrs
1. ಯೋಗ್ಯಾಂಗಲ್ಲಾ ಐತೆ (ಆಯ್ದ ಭಾಗ) : ಬೆಳಗರೆ ಕೃಷ್ಣಶಾಸ್ತ್ರಿ 2. ಒಡಲಾಳ (ಮಟ್ಟಗೌರಿಯ ನವಲು : ದೇವನೂರು ಮಹಾದೇವ 3. ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗ (ಆಯ್ದ ಭಾಗ) : ಡಿ.ವಿ.ಜಿ. 4. ನಾಳಿನ ಚಿಂತಾತ್ಮಕ (ಆತ್ಮಕಥೆ ಆಯ್ದ ಭಾಗ) : ಶಾಂತಾ ಹುಬಳಿಕರ		14 hrs
Unit-II ಕನಸು		14 hrs
1. ಅಕ್ಕನ ವಚನಗಳು : ಆಯ್ದಭಾಗ 2. ತಿರುಕನ ಕನಸು : ಮುಪ್ಪಿನ ಷಡಕ್ಷರಿ (ತತ್ತ್ವಪದ) 3. ಹಗಲುಗನಸುಗಳು : ಎ.ಎನ್. ಮೂರ್ತಿರಾವ್ (ಪ್ರಬಂಧ) 4. ಸಾಸಿವೆ ತಂದವಳು (ಆಯ್ದ ಭಾಗ) : ಅನು: ಪಿ. ಭಾರತೀದೇವಿ		14 hrs
Unit-III ಮಳೆ		14 hrs
1. ಧಾರವಾಡದಲ್ಲಿ ಮಳೆಗಾಲ : ಚೆನ್ನವೀರ ಕಣವಿ 2. ಮತ್ತೆ ಮಳೆ ಬರಲಿ : ಸುಬ್ಬು ಹೊಲೆಯಾರ 3. ಬರ ಅಂದ್ರೆ ಎಲ್ಲರಿಗೂ ಇಷ್ಟ (ಆಯ್ದ ಭಾಗ): ಪಿ. ಸಾಯಿನಾಥ 4. ಮತ್ತೆ ಮತ್ತೆ ಹುಯ್ಯುತಿದೆ : ಯು.ಆರ್. ಅನಂತಮೂರ್ತಿ		

Books recommended.

೧. ಕರ್ನಾಟಕ ಜನಜೀವನ : ಬೆಟಗೇರಿ ಕೃಷ್ಣಶರ್ಮ
೨. ಚಿತ್ರಗಳು ಪತ್ರಗಳು : ಎ.ಎನ್. ಮೂರ್ತಿರಾವ್
೩. ಬಸವಯ್ಯನ ವಚನಕಾರರು : ಬಸವಕೇಂದ್ರ, ಬೆಂಗಳೂರು
೪. ಬರ ಅಂದ್ರೆ ಎಲ್ಲರಿಗೂ ಇಷ್ಟ : ಪಿ. ಸಾಯಿನಾಥ
೫. ಯುಗಧರ್ಮ ಮತ್ತು ಸಾಹಿತ್ಯ ದರ್ಶನ : ಕೀರ್ತಿನಾಥ ಕುರ್ತಕೋಟಿ

Common for all 04-Year UG Programmes

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AECC									
Sem	Type of Course	Theory/ Practical	Instruction hour per week	Total hours of Syllabus / Sem	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks	Credits
III	AECC	Theory	04 hrs	42	02 hrs	40	60	100	03
IV	AECC	Theory	04 hrs	42	02 hrs	40	60	100	03
Details of the other Semesters will be given later									

Student shall choose two AECC, out of which Kannada as AECC is mandatory.

Name of Course (Subject) : Kannada

B.Sc. Semester – III

Subject: Kannada

Ability Enhancement Compulsory Course (AECC)

AECC-III

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-03	AECC	Theory	03	03	42 hrs	2hrs	40	60	100

Title of the AECC: ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ- ವರದಾ-೩

Course Outcome (CO):

After completion of course -1, students will be able to:

CO 1 : ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಮನುಷ್ಯನನ್ನು ಮನುಷ್ಯನನ್ನಾಗಿ ಕಾಣುವ ಭಾವನೆ ಮೂಡುತ್ತದೆ.

CO 2 : ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಾತಿನಿಧಿಕ ಕೃತಿಗಳ ಅದಲೋಕನದಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ 'ದಯವೆ ಧರ್ಮದ ಮೂಲ' ಎಂಬ ಅರಿವು ಮೂಡುತ್ತದೆ.

CO 3 : 'ದೇಶ ಸುತ್ತು-ಕೋರ ಓದು' - ಎಂಬುದರ ಹಿನ್ನಲೆಯಲ್ಲಿ ದೇಶ ವಿದೇಶಗಳ ಸಾಂಸ್ಕೃತಿಕ ಚರಿತ್ರೆ ಅರಿವಾಗುತ್ತದೆ.

CO 4 : ಮಕ್ಕಳಲ್ಲಿ ವೈಚಾರಿಕ ಪ್ರಜ್ಞೆ ಮೂಡುವ ಮೂಲಕ ಪ್ರಶ್ನಿಸುವ ಮತ್ತು ಅಭಿವ್ಯಕ್ತಿಸುವ ಸಾಮರ್ಥ್ಯ ಬೆಳೆಯುತ್ತದೆ.

CO 5 : ವಿಜ್ಞಾನ ಮತ್ತು ಸಾಹಿತ್ಯದ ಸಂಬಂಧಗಳ ಅರಿವಿನೊಂದಿಗೆ ಮಾನವೀಯತೆ ಜಾಗೃತಗೊಳ್ಳುತ್ತದೆ.

Syllabus- AECC-III : Title- ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ-ವರದಾ-೩	Total Hrs: 42
ಭಾಗ- I ಮಾನವೀಯತೆ	12 hrs
೧. ವಿವಿಧವರ ವಚನಗಳು	

೧) ಕಳಬೇಡ ಕೊಲಬೇಡ ೨) ಏನು ಬಂದಿರಿ ೩) ಪಯವಿಲ್ಲದಾ ಧರ್ಮ ೨. ಅಮೃತ ಬಳ್ಳಿಯ ಕವಾಯ - ಜಯಂತ ಕಾಯಕಿ ೩. ಅರಳಿ ಮರಕ್ಕೆ ಅವನೂ ಒಬ್ಬ ಮನುಷ್ಯ - ಕೃಷ್ಣಮೂರ್ತಿ ಬಳಗರೆ	
ಘಟಕ-II ಪ್ರವಾಸ	10 hrs
೧. ಉತ್ಕಲ ವಂಗಾ - ಪ್ರವಾಸ ಕಥನದ ಆಯ್ದ ಭಾಗ ೨. ಬ್ರಿಟನ್ನಿನ ಮಲೆನಾಡು - ದಿನಕರ ದೇಸಾಯಿ ೩. ನನ್ನದೆಯಾ ಹಾಡು ಕ್ಯೂಬಾ - ಜಿ.ಎನ್. ಮೋಹನ್	
ಘಟಕ-III ವಿಚಾರ ಕ್ರಾಂತಿ	10 hrs
೧. ವೈಚಾರಿಕ ಪ್ರಜ್ಞೆಗೆ ಅಡೆ ತಡೆಗಳು - ಹೆಚ್. ನರಸಿಂಹಯ್ಯ ೨. ಮಹಿಳೆ ಮತ್ತು ತತ್ವಪದ - ಮೀನಾಕ್ಷಿ ಬಾಳಿ ೩. ದಾರಿಯ ಬುತ್ತಿ - ಶಂಭಾ ಜೋಶಿ	
ಘಟಕ-IV ಸಂಕೀರ್ಣ	10 hrs
೧. ಮನೋಕಲ್ಪರ್ ಮಾಯೆಯ ವಿಶ್ವದರ್ಶನ - ಶಿವಾನಂದ ಕಳವೆ ೨. ಪರಿಸರ ನಿರ್ವಹಣೆ ಮತ್ತು ಮಹಿಳೆ - ಸತ್ಯಾ ಎಸ್. ೩. ಪರಿಸರದ ಕಥೆ - ಪೂರ್ಣಚಂದ್ರ ತೇಜಸ್ವಿ	

B.Sc. Semester – IV

Subject: KANNADA
Ability Enhancement Compulsory Course (AECC)

AECC-IV

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-04	AECC	Theory	03	03	42 hrs	2hrs	40	60	100

Title of the Course : ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ- ವರದಾ-೪

Course Outcome (CO):

After completion of course, students will be able to:

CO 1 : ಲವಕಾರ ವಂಚಿತರ ಬದುಕಿನ ಸಕಾರಗಳನ್ನು ಶೋಧಿಸುತ್ತ ಅವಕಾಶದಡಿಗೆ ಸಾಗಲು ಪ್ರಯತ್ನಿಸುತ್ತಾರೆ.

CO 2 : ಸಾಮಾಜಿಕ ಕಂದಕಗಳು ಸಾಹಿತ್ಯಕ ಅವಲೋಕನದಿಂದ ಅರಿವಾಗುತ್ತದೆ.

CO 3 : ಕೂಡಿ ಬಾಳುವುದರ ಸಾರ್ಥಕತೆಯ ಅರಿವಾಗುತ್ತದೆ.

CO 4 : ಸಹಿಷ್ಣುತಾ ಮನೋಭಾವದೊಂದಿಗೆ ಸಾಮಾಜಿಕ ಸದೃಢತೆ ನೆಲೆಗೊಳ್ಳುತ್ತದೆ.

CO 5 : ತಂತ್ರಜ್ಞಾನ ಯುಗದಲ್ಲಿ ಜನಸಾಮಾನ್ಯರ ಬದುಕುಗಳಾಗುತ್ತಿದೆ. ಅದರ ಅರಿವಿನ ಮೂಲಕ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಸಾಮಾನ್ಯರ ಬದುಕಿನ ಸ್ಥಿತಿಗತಿ ಗೊತ್ತಾಗುತ್ತದೆ.

Syllabus- AECC- IV : Title- ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ-ವರದಾ-೪		Total Hrs: 42
ಘಟಕ-1 ದಮನಿತ ಲೋಕ		12 hrs
1. ಕರಿಸಿದ್ದ - ಕುವೆಂಪು 2. ನಿಮ್ಮಡನಿದ್ದೂ ನಿಮ್ಮಂತಾಗದೆ - ಕೆ.ಎಸ್. ನಿಸಾರ ಅಹಮ್ಮದ 3. ಹಸಿದವರು (ಕವಿತೆ) - ಡಾ. ನಿಜಲಿಂಗಪ್ಪ ಮಟ್ಟಹಾಳ		
ಘಟಕ-2 ಸಹಿಷ್ಣುತೆ		10 hrs
1. ಕಡಕೋಳ ಮಡಿವಾಳಪ್ಪನವರ 'ಶರಣಾರ್ಥಿ' ತತ್ವಪದ 2. ಕನ್ನಡದ ಬೀಜಮಂತ್ರ - ಕೆ.ವಿ. ಸುಬ್ಬಣ್ಣ 3. ಸಮನ್ವಯ ಸಂಸ್ಕೃತಿ - ಎಚ್. ತಿಪ್ಪೇರುದ್ರಸ್ವಾಮಿ		
ಘಟಕ-3 ಶ್ರೀ ಸಾಮಾನ್ಯನ ಬದುಕು		10 hrs
4. ಉತ್ತರಾದೇವಿ ಜನಪದ ಕಥನ ಕವನದ ಆಯ್ದ ಭಾಗ 5. ಮೊಸರಿನ ಮಂಗಮ್ಮ - ಮಾಸ್ತಿ ವೆಂಕಟೇಶ ಅಯ್ಯಂಗಾರ 6. ಅಕ್ಕೋಬರ 2 ರಂದು ಅಸಾಮಾನ್ಯ ಗಾಂಧೀ ಮಾರಾಜನಿಗೆ ಸಾಮಾನ್ಯ ಹೇಳಿದ್ದು - ಚಂದ್ರಶೇಖರ ಪಾಟೀಲ		
ಘಟಕ-4 ಸಂಕರಣ		10 hrs
1. ವಿಜ್ಞಾನ ಮತ್ತು ಧರ್ಮ - ಜಿ. ರಾಮಕೃಷ್ಣ 2. ಮೊಬೈಲ್ ಯುಗದಲ್ಲಿ ಮುನ್ನೆಚ್ಚರಿಕೆ 3. ಔಪಧಿಗಿಂತ ಪರಿಣಾಮಕಾರಿ ಜೀವನಶೈಲಿ ಬದಲಾವಣೆ - ಡಾ. ವಸುಂಧರಾ ಭೂಪತಿ		

Name of Course (Subject) : Kannada

B.Com. Semester - III

Subject: Kannada

Ability Enhancement Compulsory Course (AECC)

AECC-III

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-03	AECC	Theory	03	03	42 hrs	2hrs	40	60	100

Title of the AECC: ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ-ಮಲಪ್ರಭಾ-೨

Course Outcome (CO):

After completion of course -III, students will be able to:

- CO 1 : 'ಮನರಂಜನ' ಅವಕಾಶಗಳ ಹೆಚ್ಚಾಗಿಲ್ಲ ಎಂಬುದು ತಿಳಿಸುತ್ತದೆ.
- CO 2 : 'ಕೃಷಿ' ಎಂಬುದೊಂದು ಉದ್ದಿಮೆಯಾಗಬೇಕೆಂಬ ಹಂಬಲ ಮೂಡುತ್ತದೆ.
- CO 3 : ಕೃಷಿ ಸಂಬಂಧಿತ ಬದುಕಿನ ಭಾವನೆಗಳ ಅರಿವಾಗುತ್ತದೆ.
- CO 4 : ಗಂಡು-ಹೆಣ್ಣು ಎಂಬುದು ಕೇವಲ ಜೈವಿಕ ವ್ಯತ್ಯಾಸವೇ ಹೊರತು ಸಾಧನಗಳಲ್ಲ ಎಂಬ ಭಾವನೆ ಬೆಳೆಗೊಳ್ಳುತ್ತದೆ.
- CO 5 : ಸಾಹಿತ್ಯ ಮತ್ತು ವಾಣಿಜ್ಯಗಳ ಸಂಬಂಧ ತಿಳಿಯುತ್ತದೆ.

Syllabus- AECC-III : Title- ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ-ಮಲಪ್ರಭಾ-೨	Total Hrs: 42
ಭಟಕ-I ಮನರಂಜನ ಮಾಧ್ಯಮ	12 hrs
೧. ರಂಗಭೂಮಿಗೆ ಸಂಬಂಧಿಸಿದ ಒಂದು ಬಾಸುಲಿ ಲೇಖನ - ಅನಿಲ ದೇಸಾಯಿ ೨. ಸಂಸಾರ ನೌಕೆ - ಸಿನಿಮಾ ಕುರಿತು ಲೇಖನ - ಕೆ. ಪುಟ್ಟಸ್ವಾಮಿಗೌಡ ೩. ತಾಳಮದ್ದಲೆ ಎಂಬ ಮಾತಿನ ಕಲೆ - ಎ. ನಾರಾಯಣ	
ಭಟಕ-II ಮಾರುಕಟ್ಟೆ	10 hrs
೧. ಪ್ರಾಚೀನ ಮತ್ತು ಮಧ್ಯಕಾಲೀನ ಕರ್ನಾಟಕದ ಮಾರಾಟ ಸುಂಕ - ಡಾ.ಬಿ.ಆರ್. ಹಿರೇಮಠ ೨. ಸಂತೆ - ಸಿದ್ಧಲಿಂಗಯ್ಯ ೩. ದೇಹ ಸರಕಾಗುವುದು ಬೇಡ - ಡಾ.ಸಿ.ಜಿ. ಮಂಜುಳ	
ಭಟಕ-III ಲಿಂಗ ಸಮಾನತೆ	10 hrs
೧. ಮಹಿಳಾ ಸಮಾನತೆ ಕುರಿತು ಒಂದು ಲೇಖನ. ೨. ಬೆಂಕಿಮಳೆ - ಬಾಸು ಮುಷ್ತಾಕ. ೩. ಮಂಜಮ್ಮ ಜೋಗುತಿ ಜೀವನ ಕಥನದ ಆಯ್ದ ಭಾಗ - ಅರುಣ ಜೋಳದ ಕೂಡಲಗಿ	
ಭಟಕ-IV ಸಂಕರಣ	10 hrs
೧. ವ್ಯವಹಾರ ಪತ್ರ ಸ್ವರೂಪ - ಲಕ್ಷಣ - ಮಹತ್ವ ೨. ವ್ಯವಹಾರ ಪತ್ರದ ಪ್ರಕಾರಗಳು ೩. ವ್ಯವಹಾರ ಪತ್ರದ ಮಾದರಿಗಳು	

B.Com. Semester – IV

Subject: KANNADA

Ability Enhancement Compulsory Course (AECC)

AECC-IV

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-04	AECC	Theory	03	03	42 hrs	2hrs	40	60	100

Title of the Course : ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ-ಮಲಪ್ರಭಾ-ಳಿ

Course Outcome (CO):

After completion of course, students will be able to:

CO 1 : ನೀರು ಜೀವಹನಿ : ಅದರ ಮಹತ್ವ ಅದರ ಬಳಕೆ-ಉಳಿಕೆಯ ಪರಿಚ್ಛಾನ ಮಾಡುತ್ತದೆ.

CO 2 : ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಮುದಾಯ ಪ್ರಜ್ಞೆ ಸೂಡುತ್ತದೆ.

CO 3 : 'ಸಂಘಂ ಶರಣಂ ಗಚ್ಛಾಮಿ'-ಎಂಬ ಭಾವ ನೆಲೆಗೊಳ್ಳುತ್ತದೆ; ಆ ಮೂಲಕ ಕೂಡಿ ಬಾಳಿದರೆ ಸ್ವರ್ಗಸುಖವೆಂದು ತಿಳಿಯುತ್ತದೆ.

CO 4 : ಸಾವು ಪ್ರಕೃತಿಯ ಸಹಜ ಘಟನೆಯಾದರೂ; ಅದನ್ನು ತಾನಾಗಿ ತಂದುಕೊಳ್ಳುವಂತ ಮನಸ್ಸು ಹಿಂಜರಿಯುತ್ತದೆ.

CO 5 : ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಬದುಕಿನ ಸರ್ವಾಂಗೀಣ ಪ್ರಗತಿಗೆ ಬೇಕಾಗುವ ಎಲ್ಲ ಕ್ಷೇತ್ರಗಳ ಪರಿಚಯವಾಗುತ್ತದೆ.

Syllabus- AECC- IV : Title- ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ-ಮಲಪ್ರಭಾ-ಳಿ	Total Hrs: 42
ಘಟಕ-I ಕಡಲು	12 hrs
1. ಸಮುದ್ರ ಗೀತೆಗಳು(ಆಯ್ದ ಭಾಗ) - ವಿ.ಕೃ. ಗೋಕಾಕ 2. ಅಲೆಮಾರಿ ಅಂಡಮಾನ್ - ಆಯ್ದ ಭಾಗ 3. ಕಡಲ ತಡಿಯ ಬೇಸಗೆ - ಆಲ್ಬರ್ಟ್ ಕಾಮೂ ಅನುವಾದ : ಕೇಶವ ಮಳಗಿ	
ಘಟಕ-II ಸಹಬಾಳ್ವೆ	10 hrs
1. ಚೆನ್ನೂರು ಜಲಾಲಸಾಬರ ತತ್ವಪದ - ಸಬ್ ಕಹತೆ... 2. ಸಹಬಾಳ್ವೆ ಸಹಿಷ್ಣುತೆ ಒಂದು ವಿವೇಚನೆ - ನಿ. ಮುರಾರಿ ಬಲ್ಲಾಳ 3. ಸವಿತಾ ನಾಗಭೂಷಣ ಅವರ ಒಂದು ಕವಿತೆ	
ಘಟಕ- III ಸಾವು	10 hrs
1. ತಿರುಕುಳ ವಿನಾಚಿಯ ಪ್ರಸಂಗ(ಆಯ್ದ ಭಾಗ) - ಷಡಕ್ಷರದೇವ 2. ಸುಧೀರ - ಗಂಗಾಧರ ಚಿತ್ತಾಲ 3. ಕತ್ತರಿಸಿದ ನಾಲಿಗೆ - ಡಾ. ವೈ.ಎಂ. ಭಜಂತ್ರಿ	
ಘಟಕ- IV ಸಂಕರಣ	10 hrs
1. ಹುದ್ದೆಯ ಜಾಹೀರಾತು, ಅಬ್ಯರ್ಥನ ನೇಮಕ 2. ವರದಿಗಳು 3. ಬ್ಯಾಂಕು ಪತ್ರಗಳು 4. ವಿಮಾ ಪತ್ರಗಳು 5. ಸಂಕ್ಷೇಪ ಲೇಖನ 6. ಪ್ರಬಂಧ ಲೇಖನ	

KARNATAK UNIVERSITY
SYLLABUS OF ENVIRONMENTAL STUDIES (Revised)
ABILITY ENHANCEMENT COMPULSORY COURSE (AECC) under NEP-2020
EFFECTIVE FROM 2023-2024

Total Contact Hours: 42	Course Credits: 3
No. of Teaching Hours/week: 3	Duration of ESA/Exam: 2 Hours
Formative assessment Marks: 40	Semester end assessment Marks: 60

Course Outcome (CO):

After completion of course, students will be able to:

CO 1. Define environmental studies and ecology with basic principles.

CO 2. To examine the natural resources and their types and utility.

CO 3. To outline the diversity and explain the conservation and its significations.

CO 4. To identify the environmental issues, types of pollutions and their impact.

Content of ENVIRONMENTAL STUDIES – AECC		42 Hours
Unit 1	✓ Chapter 1: Introduction to Environmental Studies: • Multidisciplinary nature of environmental studies. • Scope and importance; Concept of sustainability and sustainable development.	2
	✓ Chapter 2: Ecosystems • What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chains, foodwebs and ecological succession. Case studies of the following ecosystems: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)	5
	✓ Chapter 3: Natural Resources: Renewable and Non-Renewable Resources • Land resources and land-use change; Land degradation, soil erosion and desertification. • Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. • Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (International & Inter-state). • Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.	7

Unit 2 ✓	Chapter 4: Biodiversity and Conservation - Levels of biological diversity: Genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hotspots. - India as a mega-biodiversity nation; Endangered and endemic species of India.	7
	- Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity. - Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.	
✓	Chapter 5: Environmental Pollution - Environmental Pollution: Types, causes, effects and controls; Air, water, soil and noise pollution. - Nuclear hazards and human health risks. - Solid waste management, Control measures of urban and industrial waste. - Pollution case studies.	7
Unit 3	Chapter 6: Environmental Policies and Practices - Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. - Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and Control of Pollution) Act; Wildlife (Protection) Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD). - Nature reserves, tribal populations and rights, and human-wildlife conflicts in Indian context.	7
	Chapter 7: Human Communities and the Environment - Human population growth: Impacts on environment, human health and welfare. - Resettlement and rehabilitation of project affected persons; case studies. - Disaster management: Floods, Earthquake, Cyclones and Landslides. - Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan. - Environmental ethics: Role of Indian and other religions and cultures in environmental conservation. - Environmental communication and public awareness, case studies (e.g., CNG vehicles in cities).	5
	Chapter 8: Field work (Any two) - Visit to an area to document environmental assets: river/forest/flora/fauna, etc. - Visit to a local polluted site- urban/Rural/Industrial/ Agricultural. - Study of common plants, insects, birds, and basic principles of identification. - Study of simple ecosystems – pond, lake and river.	2

B.Sc.: Semester – IV**Subject: Botany****Discipline Specific Core Course (DSCC)**

The Course Botany in III semester has two papers (Theory paper- 033 BOT 011 for 04 credits and Practical paper- 033 BOT 012 for 02 credits) for 06 credits: Both the papers are compulsory. Details of the courses are as

Course no: 7

Course Code: 034 BOT 011

Number of Theory Credits	Total Lecture Hours/Semester	Number of Practical Credits	Total Practical hours/Semester
04	56	02	56

Title of the course (theory): DSSC ECOLOGY AND CONSERVATION BIOLOGY**Course outcome****Students will be able to**

- Know the principles and concept of ecosystems- Components, productions, Energy and limiting factors.
- Know the concepts of productivity, measurements of productivity, food chain, food webs and trophic levels
- Understand the diversity and characters of major ecosystems – Aquatic (Marine and Freshwater) Terrestrial and Agricultural ecosystems
- Know the Concept of biotic community with their Size and structure of biotic community- Physiognomy, Life-forms, stratification, ecotones and concept of edge-effect.
- Understand the causes and patterns of ecological succession, concept of climax.
- Know the Concept of ecological niches, species coexistence, overlapping and niche segregation
- Know the concept of Eutrophication, Heavy metal pollution, Ozone depletion, greenhouse effect, Global warming and its effect, Acid rains. Pesticide, particulate and nuclear radiation.
- Understand the Solid wastes. Noise Pollution. Pest population and its biological control, invasive species and their effects on native species in aquatic and terrestrial ecosystems.
- Know the Patterns of diversity in a community, Diversity measurement and indices.
- Understand the Global distribution of organisms, concept of islands, biodiversity hotspots. Methods of conservation of biodiversity. Centers for origin of cultivator plants.
- Know the population density, Natality and mortality. Life table, population growth curves, carrying capacity.
- Know the positive and negative interactions among the organisms.

Contents of Theory Course

Unit	Topics	Teaching Hours
1	Introduction to Ecology and Conservation Biology: Definitions, Principles of Ecology, Brief History, Major Indian Contributions, Scope and importance. Ecological levels of organisation. Ecological factors: Climatic factors: light, temperature, precipitation and humidity. Edaphic factors: Soil and its types, soil texture, soil profile, soil formation; physico-chemical properties of soil - mineral particle, soil pH, soil aeration, organic matter, soil	14

humus and soil microorganisms.

Topographic Factors: Altitude)

Ecological groups of plants and their adaptations: Morphological and anatomical adaptations of hydrophytes, xerophytes, epiphytes and halophytes.

(**Ecosystem Ecology** (Introduction, types of ecosystems with examples -terrestrial and aquatic, natural and artificial.

Structure of ecosystem: Biotic and Abiotic components, detailed structure of a pond ecosystem)

Ecosystem functions and processes: Food chain-grazing and detritus; Food web.)

✓ **Ecological pyramids** -Pyramids of energy, biomass and number. Principles of Energy flow in ecosystem.

✓ **Bio-geo chemical cycles:** Gaseous cycles -carbon and nitrogen, Sedimentary cycle- Phosphorus.

✓ **Ecological succession:** Definition, types- primary and secondary. General stages of succession. Hydrosere and xerosere.

[**Community Ecology:** Community and its characteristics - frequency, density, Abundance, cover and basal area, phenology, stratifications, life-forms. Concept of Ecotone and Ecotypes.

Intra-specific and Inter-specific interactions with examples.]

Ecological methods and techniques: Methods of sampling plant communities - transects and quadrates. Remote sensing as a tool for vegetation analysis, land use - land cover mapping.

Population Ecology: Population and its characteristics - Population density, natality, mortality, age distribution, population growth curves and dispersal?

Phytogeography and Environmental issues:

Theory of land bridge, theory of continental drift, polar oscillations and glaciations.

Centre of origin of plant - Vavilov's concept, types. Phytogeographical regions - concept, phytogeographical regions of India.

Vegetation types of Karnataka - Composition and distribution of evergreen, semi-evergreen, deciduous, scrub, mangroves, shoal forests and grasslands. An account of the vegetation of the Western Ghats.

Pollution: Water pollution: Causes, effect, types; water quality indicators, water quality standards in India, control of water pollution (Waste water treatment).

Water pollution disasters - National mission on clean Ganga, Minimata, Pacific gyre garbage patch, Exxon valdez oil spill.

Air pollution: Causes, effect, air quality standards, acid rain, control.

Soil pollution. Causes, effect, solid waste management, control measures of soil pollution.

Biodiversity and its conservation:

Biodiversity: Definition, types of biodiversity - habitat diversity, species diversity and genetic diversity, Global and Indian species diversity. SDG's in biodiversity conservation.

• Values of Biodiversity - Economic and aesthetic value, Medicinal and timber yielding

14 hrs

14hrs

14 hrs

plants. NTFP. Threats to biodiversity.
 Concept of Biodiversity Hotspots, Biodiversity hot spots of India.
 Concept of endemism and endemic species.
 ICUN plant categories with special reference to Karnataka/ Western Ghats.
 Biodiversity Conservation- Indian forest conservation act, Biodiversity bill (2002).
 Conservation methods – *In-situ* and *ex-situ* methods
In-situ methods –Biosphere reserves, National parks, Sanctuaries, Sacred grooves.
Ex-situ methods-Botanical gardens, Seed bank, Gene banks, Pollen banks, Culture
 collections, Cryopreservation.

Total

56 Ho

SUGGESTED REFERENCE BOOKS:

1. Sharma, P.D. 2018. Fundamentals of Ecology. Rastogi Publications.
2. Odum E.P. (1975): Ecology By Holt, Rinehart & Winston.
3. Oosting, H.G. (1978): Plants and Ecosystem Wadworth Belmont.
4. Kochhar, P.L. (1975): Plant Ecology. (9th Edn.,) New Delhi, Bombay, Calcutta-226pp.,
5. Kumar, H.D. (1992): Modern Concepts of Ecology (7th Edn.,) Vikas Publishing Co., New Delhi.
6. Kumar H.D. (2000): Biodiversity & Sustainable Conservation. Oxford & IBH Publishing Co Ltd New Delhi.
7. Newman, E.L (2000): Applied Ecology, Blackwell Scientific Publisher, U.K.
8. Chapman, J.L&M.J. Reiss (1992): Ecology (Principles & Applications). Cambridge University Press U.K.
9. Malcolm L. Hunter Jr., James P. Gibbs, Viorel D. Popescu, 2020. Fundamentals of Conservation Biology, 4th Edition. Wiley-Blackwell.
10. Saha T. K., 2017. Ecology and Environmental Biology. Books and Allied Publishers.

B.Sc. Semester – I
Open Elective Course (OEC)-1
Course Title: PHYOET 1.1: Energy Sources

Type of Course	Theory / Practical	Credits	No. of Classes/Week	Total No. of Lectures/Hours	Duration of Exam in hrs	Internal Assessment Marks	Semester End Exam Marks	Total Marks
OEC-I	Theory	03	03	42	3	30	70	100

Unit -1

(14 Hours)

Introduction to Energy Sources: Energy concepts, sources in general, its significance and necessity. Classification of energy sources: primary and secondary sources. Energy consumption as a measure of prosperity. Need of renewable energy sources. Conventional (commercial) energy sources, Non- Conventional energy sources (Renewable energy). Advantages of renewable energy. Obstacles to the implementation of renewable energy systems. Prospects of renewable energy sources. Fossil fuels & Nuclear energy- production & extraction, usage rate and limitations. Impact on environment and their issues& challenges.

Unit -2

(14 Hours)

Solar-Energy and its Applications: Potential of solar energy, solar radiation and measurements, different types of solar energy collectors, advantages and disadvantages of different collectors, solar energy storage. Solar hot water supply systems. Solar air heating and cooling systems. Solar thermal electric power generation. Solar pumping, distillation, furnace and green houses. Need and characteristics of photovoltaic (PV) systems, PV models and equivalent circuits, and sun tracking systems.

Unit -3

(14 Hours)

Wind energy harvesting and Ocean Energy and energy from Biomass:

Fundamental of wind energy, wind turbines and different electrical machines in wind turbines, power electronic interfaces and grid interconnection topologies.

Ocean Energy: Ocean energy potential against wind and solar, wave characteristics and statics wave energy devices. Tide characteristics and statistics, tide energy technologies ocean thermal energy, osmotic power, ocean bio-mass.

Energy from Biomass: Biomass conversion technologies: wet process, dry process, photosynthesis. Biogas generation: Factors affecting bio-digestion. Classification of biogas plants: Floating drum plant, fixed dome plant, advantages and disadvantages of these plants.

Suggested Activities:

B.Sc. Semester – II

Open Elective Course (OEC)-II

Course Title: PHYOET 2.1: Climate Science

Type of Course	Theory / Practical	Credits	No. of Classes/Week	Total No. of Lectures/Hours	Duration of Exam in hrs	Internal Assessment Marks	Semester End Exam Marks	Total Marks
OEC-II	Theory	03	03	42	3	30	70	100

UNIT-1

(14 hours)

Atmosphere: Atmospheric Science (Meteorology) as a multidisciplinary science. Physical and dynamic meteorology, some terminology, difference between weather and climate, weather and climate variables, composition of the present atmosphere: fixed and variable gases, volume mixing ratio (VMR), sources and sinks of gases in the atmosphere. Greenhouse gases. Structure (layers) of the atmosphere. Temperature variation in the atmosphere, temperature lapse rate, mass, pressure and density variation in the atmosphere. Distribution of winds.

UNIT-2

(14 Hours)

Climate Science: Overview of meteorological observations, measurement of : temperature, humidity, wind speed and direction and pressure. Surface weather stations, upper air observational network, satellite observation. Overview of clouds and precipitation, aerosol size and concentration, nucleation, droplet growth and condensation (qualitative description). Cloud seeding, lightning and discharge. Formation of trade winds, cyclones. Modelling of the atmosphere: General principles, Overview of General Circulation Models (GCM) for weather forecasting and prediction. Limitations of the models. R and D institutions in India and abroad dedicated to climate Science, NARL, IITM, CSIR Centre for Mathematical Modeling and Computer Simulation, and many more.

UNIT-3

(14 Hours)

Global Climate Change: Greenhouse effect and global warming, enhancement in concentration of carbon dioxide and other green house gases in the atmosphere, conventional and non-conventional energy sources and their usage. EL Nino/LA Nino Southern oscillations. Causes for global warming: Deforestation, fossil fuel burning, industrialization. Manifestations of global warming: Sea level rise, melting of glaciers, variation in monsoon patterns, increase in frequency and intensity of cyclones, hurricanes, tornadoes. Geo-engineering as a tool to mitigate global warming? Schemes of geo-engineering.

2nd Sem

B.Sc. II Sem

CO9: Learn about quality of surface water, ground water. Impurities in water, standards of water quality (color, pH, hardness, TDS, sulphate, fluoride, chloride) for potable, domestic, industrial and agricultural purpose. Learn Water treatment technologies – house hold water treatment, municipal water treatment, industrial treatment (primary and secondary treatment of industrial effluent), softening of water, and disinfection of water. Determinations of DO, BOD and COD, and their significance.

Syllabus- DSCC-3 : Chemistry (Theory) III (Code: 032CHE011)		Total Hrs: 56
Unit-I: CHEMICAL BONDING & MOLECULAR STRUCTURE		14 hrs
Ionic Bonding: General characteristics of ionic compounds. Energy considerations in ionic bonding, lattice energy and solvation energy and their importance in the context of stability and solubility of ionic compounds. Born-Landé equation and calculation of lattice energy. Born-Haber cycle and its applications. Polarizing power and polarizability: Fajan's rules, ionic character in covalent compounds and percentage of ionic character. Covalent bonding: General characteristics of covalent compounds. VB approach, shapes of some inorganic molecules and ions on the basis of VSEPR and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements. Concept of resonance and resonating structures of NO_3^-, CO_3^{2-} and SO_4^{2-}. Molecular Orbital Theory: LCAO method, bonding and antibonding MOs and their characteristics for $s-s$, $s-p$ and $p-p$ combinations of atomic orbitals, nonbonding combination of orbitals, MO treatment of homonuclear diatomic molecules and ions of 1st and 2nd periods and heteronuclear diatomic molecules such as CO, NO and NO^+. Comparison of VB and MO approaches. Numerical problems are to be solved wherever applicable.		
Unit-II : ALIPHATIC HYDROCARBONS		14 hrs
Alkanes: Methods of preparation by catalytic hydrogenation, Wurtz reaction, Kolbe's synthesis and from Grignard reagent. Free radical mechanism of halogenations, relative reactivity and selectivity of halogenation. Conformational analysis of ethane and butane. Alkenes: Methods of preparation by dehydration of alcohols and dehydrohalogenation of alkyl halides. Mechanism of E1, E2, E1cb reactions. Saytzeff and Hofmann eliminations. <i>cis</i> Alkenes by partial catalytic hydrogenation and <i>trans</i>		

alkenes by Birch reduction. Reactions: Addition of HX (Markownikov's and anti-Markownikov's addition) Stereospecificity of halogen addition, regioselectivity and relative rates of addition reaction. Hydrogenation, hydration, hydroxylation and epoxidation of alkenes. Oxidative cleavage of alkenes with KMnO_4 . Ozonolysis, mechanism of ozonolysis in propene and polymerization.

Alkadienes: Classification, mechanism of addition of halogen and hydrogen halides in 1,3-diene, kinetically and thermodynamically controlled addition of HBr to 1,3-butadiene, polymerization and Diels-Alder reaction.

Alkynes: Preparation: Acetylene from CaC_2 and conversion into higher alkynes by dehalogenation of tetra halides and dehydrohalogenation of vicinal-dihalides. Reactions: Acidity of 1-alkynes and formation of metal acetylides, addition of bromine and alkaline KMnO_4 , ozonolysis and oxidation with hot alk. KMnO_4 .

(11 Lectures)

Cycloalkanes: Types of cycloalkanes and their relative stability. Baeyer strain theory and theory of strainless rings. Conformational analysis of cyclohexane with Karplus energy diagram. Axial and equatorial bonds. Relative stability of mono substituted cyclohexanes. (3 Lectures)

Unit-III : SOLIDS & CHEMICAL KINETICS

14 hrs

Solids: Types of solids. Symmetry elements, unit cells, crystal systems, Bravais lattice types and identification of lattice planes. Laws of Crystallography - Law of constancy of interfacial angles, Law of rational indices. Miller indices. X-Ray diffraction by crystals, Bragg's law. Structures of NaCl, KCl and CsCl. Defects in crystals.

Liquid Crystals: Explanation, classification with examples- Smectic, nematic, cholesteric, disc shaped and polymeric. Structures of nematic and cholesteric phases- molecular arrangements in nematic and cholesteric liquid crystals. Applications of liquid crystals in LCDs and thermal sensing. Numerical problems are to be solved wherever applicable. (7 Lectures)

Chemical Kinetics: Review of reaction rates, order and molecularity.

Factors affecting rates of reaction: concentration pressure, temperature, catalyst, etc. Examples for different orders of reactions. Derivation of integrated rate equations for zero and second order reactions (both for equal and unequal concentrations of reactants). Half-life of a reaction (numerical problems). Methods for determination

of order of a reaction by half life period and differential equation method. Effect of temperature on reaction rates, temperature coefficient, Concept of activation energy and its calculation from Arrhenius equation. Theories of Reaction Rates: Collision theory and Activated Complex theory of bimolecular reactions. Comparison of the two theories (qualitative treatment only). Numerical problems are to be solved wherever required. (7 Lectures)	
Unit-IV ANALYTICAL CHEMISTRY	14 hrs
Gravimetric Analysis: Stages in gravimetric analysis, requisites of precipitation, theories of precipitation, factors influencing precipitation, co-precipitation and post-precipitation. Structure, specificity, conditions and applications of organic reagents such as salcylaldoxime, oxine, dimethyl glyoxime, cupron and cupferron in inorganic analysis. Advantages of organic reagents over inorganic reagents. (6 Lectures) Water analysis: Water availability, requirement of water. Quality of surface water and ground water. Impurities in water. Standards of water quality for potable, domestic, industrial and agricultural purpose (color, pH, alkalinity, hardness, TDS, sulphate, fluoride, chloride etc.) Water treatment technologies: House hold water treatment, municipal water treatment and industrial treatment (primary and secondary treatment of industrial effluent). Softening of water. Disinfection of water. Definition and determinations of DO, BOD and COD, and their significance. Numerical problems are to be solved wherever required. (8 Lectures)	

Recommended Books/References

Inorganic Chemistry

1. Lee, J.D. Concise Inorganic Chemistry ELBS, 1991.
2. Cotton, F.A., Wilkinson, G. & Gaus, P.L. Basic Inorganic Chemistry, 3rd Ed., Wiley.
3. Douglas, B.E., McDaniel, D.H. & Alexander, J. J. Concepts and Models in Inorganic Chemistry, John Wiley & Sons.
4. Huheey, J. E., Keiter, E.A., Keiter, R.L. & Medhi, O. K. Inorganic Chemistry: Principles of Structure and Reactivity, Pearson Education India, 2006.
5. Shriver, D.F. & Atkins, P.W. Inorganic Chemistry, Oxford University Press.
6. Wulfsberg, G. Inorganic Chemistry, Viva Books Pvt. Ltd.

B.Sc. Semester-V

Discipline Specific Course(DSC)-11

Course Title: Chemistry (Theory) XI

Course Code:035CHE013

Type of Course	Theory /Practical	Credits	Instruction hour per week	Total No.of Lectures/Hours /Semester	Duration of Exam	Formative Assessment Marks	Summative assessment Marks	Total Marks
DSCC-11	Theory	04	04	56hrs.	2hrs.	40	60	100

Course Outcomes (COs): At the end of the course, students will be able to:

- CO1: Understand the types, theory, technique and applications of separation techniques like solvent extraction and chromatography, dyes and colors used in day-to-day life.
- CO2: Know color and constitution, classification, synthesis and applications of different types of dyes.
- CO3: Define spectroscopy and different regions of electromagnetic spectrum. Basics of UV/visible spectroscopy. Different kind of transitions that can take place within molecule
- CO4: Explain the origin of IR spectrum. Describe different types of vibrational modes of simple molecules. Explain the principles of different types of IR instruments. Outline different applications of UV, IR.
- CO5: Importance Air pollution and Water Pollution, techniques for measuring water pollution, effluent treatment plant, water purification methods, sludge disposal, disposal of nuclear wastes and Water quality parameters for waste water, industrial water and domestic water. Understand about types of soil, physical, chemical and biological properties of soil, soil organisms, micro and macronutrients
- CO6: Know about Chemical explosives and Rocket propellants.

Unit	Title: Chemistry (Theory) XI	56 hrs/sem
Unit I	Solvent extraction: Types, theory and mechanism. Extraction by ion-association and Chelation. Synergistic extraction, techniques and applications. Determination of Uranium using oxine. (3hrs)	14 hrs
	Chromatography: Classification, techniques and development of chromatograms.	
	Paper chromatography: Theory, R_f value, factors affecting R_f value and its	

	calculations, techniques and applications. Separation of Pb^{2+}, Ag^+ and Hg_2^{2+} and calculation of R_f value. Column chromatography: Theory, techniques and applications. Separation of methylene blue and malachite green. Thin-layer chromatography: Superiority of TLC, theory methodology and applications Ion exchange chromatography: Properties and types of ion exchangers. Action of cation and anion exchange resins, techniques and applications. Separation of amino acids from its mixture. Gas Chromatography and High-Performance Liquid Chromatography: Principles and applications. (11hrs)	
Unit II VLN MKS	Ultraviolet Spectroscopy: Types of electronic transitions, chromophores and auxochromes, bathochromic shift and hypochromic shift, intensity of absorption, Woodward-Fieser rules for calculating λ_{max} Conjugated dienes such as alicyclic, homoannular and heteroannular dienes. Applications of UV spectroscopy. (5 hrs) Infrared Spectroscopy: Introduction to infrared spectroscopy, intensity of absorption band, position of absorptions, C-H, $>C=O$, O-H and N-H absorption bands with explanation for variation in stretching frequencies. Identification of H-bonding in alcohols, phenols and carboxylic acids using IR spectroscopy. (5 hrs) Dyes: Theory, color and constitution, classification, mordant and wet dyes, synthesis and applications of congo red, malachite green, phenolphthalein, eosin and indigo. Dyes used in food and their safety, organic pigments with examples. (4 hrs)	14
Unit III MKS	Molecular Spectroscopy: Interaction of electromagnetic radiation with matter, electromagnetic spectrum. Rotational Spectroscopy: Rotation of molecules, diatomic: rigid rotator, selection rule: derivation for expression of energy and bond length (HCl), problems on bond length, polyatomic molecules: linear, symmetric top, asymmetric top molecules (qualitative approach).	

	Vibrational Spectroscopy: Vibrating diatomic molecules - energy of diatomic molecules, force constant, vibrational spectra: harmonically vibrating diatomic molecules (HCl) and anharmonicity, Morse potential, dissociation energies, fundamental frequencies, overtones, hot bands, degrees of freedom for polyatomic molecules, modes of vibration, concept of group frequencies, and problems on force constants. Vibration-rotation spectroscopy: diatomic vibrating rotator, P, Q, R branches. Raman spectra: Classical theory, Rotational Raman spectroscopy (Linear and symmetric top molecules for S and R branch), Vibrational Raman spectroscopy, vibration - rotational Raman spectra (Rotational fine structures), complementary of Raman and IR. Electronic Spectroscopy: Diatomid molecules: Born- Oppenheimer approximation, vibrational course structure of electronic transition and intensity, Franck - Condon principle, pre-dissociation, 'g' and 'u' transitions and their applications in organic molecules.	
Unit IV VLN	Environmental Chemistry Air pollution: Review of major regions of atmosphere. Chemical and photochemical reactions in the atmosphere. Sources, effects and control measures of air pollutants (CO, CO_2, NO_x, SO_x and H_2S). Methods of determination of CO, NO_x and SO_x. Water Pollution: Water pollutants and their sources. Techniques for measuring water pollution. Effluent treatment plant (primary, secondary and tertiary treatment). Water purification methods (reverse osmosis, electrodialysis and ion-exchange) Sludge disposal. Industrial waste management. Disposal of nuclear wastes. Water quality parameters. (7 hrs) Soil chemistry: Types of soil, physical, chemical and biological properties of soil, soil organisms, nitrogen and sulphur transformation. A brief account of micro- and macronutrients (sources and importance) Determination of pH, alkalinity, total organic matter, Ca (II) and Mg (II) ions in soil samples. (4 hrs) Chemical explosives: Preparation and explosive properties of lead azide, PETN, cyclonite (RDX). Introduction to Rocket propellants. (3 hrs)	14 hrs

B.Sc. Semester-VI

Discipline Specific Course (DSC)-13

Course Title: Chemistry (Theory) XIII

Course Code:036CHE011

Type of Course	Theory /Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours /Semester	Duration of Exam	Formative Assessment Marks	Summative assessment Marks	Total Marks
DSCC-13	Theory	04	04	56hrs.	2hrs.	40	60	100

Course Outcomes (COs):At the end of the course students will be able to:

- CO1: Understand Crystal field theory, crystal field splitting, calculation and comparison of CFSE in octahedral, tetragonal, tetrahedral and square planar complexes.
- CO2: Study the Stability of metal complexes (thermodynamic and kinetic), stepwise and overall stability constant and their relationship. Factors affecting the stability of metal complexes.
- CO3: Learn the structure and constitution of Carbohydrates, Ring Size determination and properties, Structures of disaccharides and polysaccharides and biological importance.
- CO4: Study the classification of amino acids, stereochemistry of amino acids. Zwitter ion and explanation to isoelectric point, Synthesis of amino acids and diptides, biological importance, primary, secondary structure of proteins (α -helical, β -sheet), classification, isoprene rule, special isoprene rule constitution and synthesis of citral and α -terpinol.
- CO5: Describe the Role of metal ions in biological systems with special reference to Na^+ , K^+ and Mg^{2+} ions. Na/K pump and Structure of hemoglobin, myoglobin and chlorophyll.
- CO6: Know the Solvent properties and typical reactions in liquid ammonia and liquid Sulphur dioxide.
- CO7: Distinguish between reversible and irreversible cells. Concept of EMF and its measurement.
- CO8: Describing the electrode potential, types, applications for pH and EMF determinations.
- CO9: Explaining free energy change for ideal solution, theory of distillation process for separating liquid mixtures.
- CO10: Distinguish between miscible and immiscible liquids. Explain the critical solution

temperature, liquid-solid solution, solid solutions.

CO11: Learn to develop and demonstrate knowledge pertaining to the background and development of Green Chemistry, Learn about green chemistry and its necessity, choice of solvents, atom economy, and sustainable raw materials, about the examples of green reactions and future trends in green reaction.

Unit	Title: Chemistry (Theory) XIII	56 hrs/ Sem
Unit I	Coordination Chemistry-II Crystal field theory, crystal field splitting, calculation and comparison of CFSE in octahedral and tetrahedral complexes, crystal field effects in weak and strong field ligands. Pairing energies. Factors affecting the magnitude of crystal field splitting. Spectrochemical series. Tetragonal distortion of octahedral geometry, John Teller distortion. Crystal field splitting in square planar complexes. Explanation of color and magnetic moments of complexes. Determination of magnetic susceptibility by Gouy's method. Stability of metal complexes (thermodynamic and kinetic), stepwise and overall stability constant and their relationship. Factors affecting the stability of metal complexes. (8 hrs) Bioinorganic Chemistry Role of metal ions in biological systems with special reference to Na^+, K^+ and Mg^{2+} ions. Na/K pump. Structures of hemoglobin and chlorophyll, and the role of Fe(II) and Mg(II) metal ions in these pigments. Role of Ca^{2+} in blood clotting. (3 hrs) Non-aqueous solvents Solvent properties and typical reactions studied in liquid ammonia and liquid sulphur dioxide. (3 hrs)	14 hrs
Unit II	Carbohydrates: Definition, classification, osazone formation and its mechanism, epimers and epimerization, interconversion of fructose and glucose, Kiliani synthesis and Ruff degradation, ring structure of D-glucose, mutarotation, and determination of ring size of D-glucose by Haworth-Hirst method, conformational analysis of monosaccharides (example: Glucose). Disaccharides: structure of sucrose and lactose (mention hydrolysis product, glycoside linkage and reducing properties). Polysaccharides: partial structure of starch and cellulose. (8 hrs) Photosynthesis of carbohydrates.	14 hrs

	Amino Acids, Peptides and Terpenes: Classification of amino acids, stereochemistry of amino acids, Zwitter ion and explanation to isoelectric point, synthesis of amino acids from Gabriel phthalimide synthesis, Strecker's synthesis, ninhydrin reaction. Peptides: Definition, synthesis of dipeptides by N-protecting (t-butoxycarbonyl and phthaloyl) & C-activating groups. Overview of Primary, Secondary, Tertiary and Quaternary structure of proteins. Terpenes: Classification, isoprene rule, constitution and synthesis of Citral and α-terpinol (6 hrs)	
Unit III	Electrochemistry-II Electro Motive Force(EMF) Electrochemical cells, Reversible and irreversible cells, EMF of a cell and its measurement by potentiometer, standard cell (Weston standard cell), types of electrodes, reference electrode- calomel electrode, sign conventions, Nernst equation, electrochemical series and its applications, salt bridge and its applications. Determination of pH of solution by hydrogen electrode, quinhydrone electrode and glass electrode methods, concentration cell with and without transference, liquid junction potential. Numerical problems. Applications of EMF measurements- - Determination of solubility and solubility product of sparingly soluble salts. - Potentiometric titrations- acid-base and redox titrations, - Determination of redox potential (7hrs) Energy sources: Non-conventional energy sources. Solar energy, thermal energy, wind energy, geothermal energy, photovoltaic cells, biofuels and their applications. Batteries & Fuel cells- Primary and secondary batteries – Construction and Applications of Pb-acid battery, Li-Battery, Lithium-polymer cell, and nickel-cadmium cell. Fuel cells- hydrogen-oxygen and Hydrocarbon-Oxygen fuel cells and their applications. (4hrs) Micelle: Emulsions, micro emulsions or micellar emulsions, and its stability, properties of micro emulsions: electro kinetic effects. Colloidal electrolytes or association colloids, types of colloidal electrolytes. Micelles: surface-active agents or surfactants. (3 hrs)	14 hrs

Unit IV	Green Chemistry Basics of Green Chemistry. Need for Green Chemistry. Goals of Green Chemistry. Limitations/ Obstacles in the pursuit of the goals of Green Chemistry. Twelve principles of Green Chemistry with their explanations and examples and special emphasis on the following: Designing a Green Synthesis using these principles; Prevention of Waste/ byproducts; maximum incorporation of the materials used in the process into the final products, Atom Economy, calculation of atom economy of the rearrangement, addition, substitution and elimination reactions. Prevention/ minimization of hazardous/ toxic products reducing toxicity. risk = (function) hazard $\times$ exposure; waste or pollution prevention hierarchy. Green solvent Supercritical fluids, water as a solvent for organic reactions, ionic liquids, fluorous biphasic solvent, PEG, solvent less processes, immobilized solvents and how to compare greenness of solvents. Energy requirements for reactions – alternative sources of energy: use of microwaves and ultrasonic energy. (8hrs) Examples of Green Synthesis/ Reactions Green Synthesis of the following compounds: adipic acid, catechol, disodium iminodiacetate (alternative to Strecker synthesis) Microwave assisted reactions in water: Hofmann Elimination, methyl benzoate to benzoic acid, oxidation of toluene and alcohols; Microwave assisted reactions in organic solvents Diels-Alder reaction and Decarboxylation reaction. Ultrasound assisted reactions: Sono chemical Simmons-Smith Reaction (Ultrasonic alternative to Iodine). (6hrs)	14 hrs
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Formative Assessment for Theory	
Assessment Occasion/type	Marks
Internal Assessment Test 1	10
Internal Assessment Test 2	10
Quiz/Assignment/Small Project	10
Seminar	10
Total	40 Marks
Formative Assessment as per guidelines.	

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